

Amendment

In the Claims

1. (previously presented) A method for the biological production of polyhydroxyalkanoate containing 3-hydroxyhexanoate comprising

providing genetically engineered bacteria expressing a 3-ketothiolase gene encoding an enzyme that converts butyryl-CoA and acetyl-CoA to 3-ketohexanoyl-CoA, a reductase gene that encodes an acetoacetyl-CoA reductase enzyme that converts 3-ketohexanoyl-CoA to 3-hydroxyhexanoyl-CoA, and a gene that encodes a polyhydroxyalkanoate polymerase that polymerizes 3-hydroxybutyryl-CoA and 3-hydroxyhexanoyl-CoA, wherein the enzymes are expressed in a sufficient amount to produce polyhydroxybutyrate-co-3-hydroxyhexanoate, wherein the bacteria can utilize butanol or butyrate and the bacteria will produce polyhydroxybutyrate-co-3-hydroxyhexanoate.

Claims 2-5 (canceled).

6. (previously presented) The method of claim 1 wherein the polyhydroxyalkanoate polymerase gene is incorporated into the bacterial chromosome.

7. (previously presented) The method of claim 1 for producing a copolymer of 3-hydroxyhexanoate comprising providing a polyhydroxyalkanoate polymerase gene from a bacterium selected from the group consisting of *Aeromonas caviae*, *Comamonas testosteroni*, *Thiocapsa pfenigii*, *Chromatium vinosum*, *Bacillus cereus*, *Nocardia carolina*, *Nocardia salmonicolor*, *Rhodococcus ruber*, *Rhodococcus rhodocrous*, and *Rhodospirillum rubrum*.

Claims 8-9 (canceled).

10. (previously presented) The method of claim 19 wherein the bacteria further comprise a gene encoding 3-hydroxyacyl-ACP-coenzyme A transferase.

Claims 11-13 (canceled).

14. (previously presented) The method of claim 1 wherein the bacteria is selected from the group consisting of *E. coli*, *Klebsiella*, *Ralstonia*, *Alcaligenes*, *Pseudomonas*, and *Azotobacter*.

Claim 15 (canceled).

16. (previously presented) The method of claim 1 wherein the bacteria express a gene encoding a D-specific enoyl-CoA hydratase.

17. (previously presented) The method of claim 1 wherein the bacteria express three enzymes from *C. acetobutylicum* that form butyryl CoA.

18. (previously presented) The method of claim 1 wherein the bacteria express one or more fatty acid biosynthetic enzymes.

19. (previously presented) The method of claim 18 wherein the fatty acid biosynthetic enzymes convert 3-hydroxyacyl-ACP to 3-hydroxyacyl-CoA.

20. (previously presented) The method of claim 19 where the enzymes are selected from the group consisting of 3-hydroxyacyl-ACP-coenzyme-A transferase, acyl-ACP thioesterase, and acyl-CoA synthase.

21. (original) The method of claim 20 wherein the enzymes are acyl ACP thioesterase and acyl CoA synthase.

Claims 22-34 (canceled).

35. (previously presented) The method of claim 18 wherein the enzymes are from *E. coli*.

36. (previously presented) The method of claim 18 wherein the enzymes form a complex.

37. (previously presented) The method of claim 18 wherein the enzymes are from *Nocardia salmonicolor*.

AMENDMENT AND RESPONSE TO OFFICE ACTION

38. (previously presented) The method of claim 18 wherein the enzyme epimerizes S-3-hydroxyhexanoyl-CoA to R-3-hydroxyhexanoyl-CoA.

39. (currently amended) The method of claim 38 wherein the ~~enzymes are~~ enzyme is from the *Pseudomonas putida* FaoAB complex.